REMARKS

System Claims Versus Apparatus Claims

As discussed below, system claims 1-11 were rejected under 35 U.S.C. 102(b) over each of Mower and Scofield et al., and system claims 1-7 were likewise rejected over Donaldson. In all these rejections, the Examiner stated that system claims are treated as apparatus claims. The Examiner then cited cases stating that expressions relating the apparatus to contents thereof during an intended operation, and the inclusion of a material or article worked on by a structure being claimed, are of no patentable significance. The Examiner concluded that much of the language of Applicants' system claims is of no patentable significance and thus will not be considered in distinguishing the prior art.

Applicants respectfully disagree with the Examiner's approach. The Examiner is requested to make of record any supporting authority for treating system claims as apparatus claims. The MPEP only discusses system claims in relation to applications filed without drawings. In 601.01(f), the MPEP states that drawings are usually unnecessary when the invention relates to an article, apparatus, or system where the sole distinguishing feature is the presence of a particular material, in other words, where the invention resides solely in the use of a particular material in an otherwise old article, apparatus or system recited broadly in the claims, for example a hydraulic system distinguished solely by the use therein of a particular hydraulic fluid.

This MPEP section contradicts the Examiner's position that system claims are treated as apparatus claims, because it discusses system inventions and apparatus inventions as being two different categories of invention. Also, it contradicts the position that contents or materials in system claims are of no patentable significance, because it gives a specific example where the contents are the sole patentable feature of a system claim (a particular hydraulic fluid in an otherwise old system).

Applicants' research located numerous recent Federal Circuit cases in which system claims were considered a separate category of claim, and in which there was no suggestion to treat the system claims as apparatus claims. For example, some of these cases include McKesson Information Solutions Inc. v. Bridge Medical Inc., 82

USPQ2d 1865; LG Electronics Inc. v. Bizcom Electronics Inc., 79 USPQ2d 1443; Harris Corp. v. Ericsson Inc., 75 USPQ2d 1705; NTP Inc. v. Research In Motion Ltd., 75 USPQ2d 1763; Business Objects SA v. MicroStrategy Inc., 73 USPQ2d 1520; Sierra Applied Sciences Inc. v. Advanced Energy Industries Inc., 70 USPQ2d 1577; Alloc Inc. v. International Trade Commission, 68 USPQ2d 1161; Bio-Technology General Corp. v. Duramed Pharmaceuticals Inc., 66 USPQ2d 1360; In re GPAC Inc., 35 USPQ2d 1116; Davis v. Loesch, 27 USPQ2d 1440; and Georgia-Pacific Corp. v. United States Gypsum Co., 52 USPQ2d 1590.

In the Georgia-Pacific case, the system claims related to the use of fiberglass mat-reinforced gypsum boards as the substrate for layered systems used to finish the exterior portions of buildings. Thus, this case is another example where a material recited in a system claim was considered important to the patentability of the claim, contrary to the Examiner's position that such materials are of no patentable significance in system claims.

It should also be noted that a system claim relates to a collection of items operating together. For example, in the present system claims the reactors, materials in the reactors, entering streams/supplies, exiting streams/supplies, etc., operate together to produce the claimed result. It would be improper to ignore these items in the determination of patentability. The system claims are very different from apparatus claims which relate solely to the apparatus.

In view of the above, the Examiner is respectfully requested to consider all the words of the system claims in determining their patentability over the prior art.

Rejection Over Mower

Claims 1-11 were rejected under 35 U.S.C. 102(b) as being anticipated by Mower (US 2,630,371). Mower discloses a process of carbonating a magnesium hydroxide slurry using a flue gas to produce magnesium bicarbonate. At col. 4, lines 26-32, Mower discloses that slurries containing magnesium hydroxide can be produced from sources of raw material such as serpentine or olivine.

In contrast to the present claims, there is no teaching or suggestion in Mower of a system in which a metal silicate is reacted with a caustic material to produce a hydroxide of the metal. Specifically, Mower does not suggest a "first reaction chamber for reacting a metal silicate with a caustic material to produce a hydroxide of the metal" as recited in claim 1. Mower does not suggest "a supply of the metal silicate entering the system" or "a reactor structured for converting the metal silicate to a metal carbonate and silica with the use of a caustic material" as recited in claim 3. Further with respect to claim 3, there is no suggestion in Mower of "the silica exiting the system" as a separate product. With respect to claim 8, Mower does not suggest "a supply of rock entering the system, the rock containing the useful metal and a metal silicate", "a reactor structured for converting the metal silicate to a metal carbonate, with the use of a caustic material", or "apparatus for removing the useful metal from the rock". There is no suggestion in Mower of "a stream of the useful metal exiting the system". Therefore, it is respectfully submitted that the claims are novel and nonobvious over Mower.

New claims 32, 34 and 36 state that the metal carbonate is a solid phase carbonate. In contrast, a goal of the Mower invention is to prevent the formation of solid phase carbonate. At col. 1, lines 39-43 and col. 2, lines 35-40, Mower describes the goal of forming a magnesium bicarbonate from a slurry with a minimum formation of solid phase carbonate. At col. 3, line 40, Mower shows the product magnesium bicarbonate to be in hydrated form, in contrast to the present claims which recite a solid phase carbonate.

Rejection Over Donaldson

Claims 1-7 were rejected under 35 U.S.C. 102(b) as being anticipated by Donaldson (US 3,112,994). Donaldson discloses a digester for the digestion of aluminous ore in a caustic aqueous aluminate liquor to extract alumina from the ore. At col. 4, lines 9-11, the "caustic" is defined as NaOH or caustic soda calculated as Na_2CO_3.

In contrast to the present claims, there is no teaching or suggestion in Donaldson of a system in which a metal silicate is reacted with a caustic material to produce a hydroxide of the metal, and then the metal hydroxide is reacted with a source of carbon dioxide to produce a carbonate of the metal. Specifically, Donaldson does not suggest a "a gas stream containing carbon dioxide", "a first reaction chamber for reacting a metal silicate with a caustic material to produce a hydroxide of the metal", or "a second reaction chamber for contacting the metal hydroxide with the gas stream containing the carbon dioxide" as recited in claim 1. Donaldson does not suggest "a reactor structured for converting the metal silicate to a metal carbonate and silica with the use of a caustic material, and with the use of carbon dioxide", as recited in claim 3. Further with respect to claim 3, there is no suggestion in Donaldson of "the metal carbonate and the silica exiting the system as separate products". There is no suggestion of introducing a carbon dioxide gas as recited in new claim 32.

Further, claims 1 and 3 have been amended to recite a metal silicate selected from calcium silicates, magnesium silicates, iron-bearing silicates, or mixtures thereof. The Donaldson invention relates solely to a method for digesting aluminous ore to produce alumina. There is no suggestion to digest calcium, magnesium or iron-bearing silicates. Also, there is no suggestion of a system for sequestering carbon dioxide from a gas as recited in claim 1, or a system or carbonating a metal silicate as recited in claim 3. Therefore, it is respectfully submitted that the claims are novel and nonobvious over Donaldson.

Moreover, at col. 1, lines 39-44, Donaldson states that it is a primary purpose of the invention to provide an improved method and apparatus for continuously digesting aluminous ores in caustic aluminate liquor whereby maximum efficiency in the process of extracting and solubilizing aluminous ores in caustic aluminate liquors is attained. This primary purpose of the Donaldson invention is totally foreign to the present invention.

Rejection Over Scofield et al.

Claims 1-11 were rejected under 35 U.S.C. 102(b) as being anticipated by Scofield et al. (US 1,494,029). Scofield et al. discloses a process in which a potash-feldspar ore is first digested with caustic potash to produce potassium silicate, potassium aluminate and potassium aluminate silicate (page 1, lines 31-66). The digestion products are then carbonated with carbon dioxide to produce potassium bicarbonate, aluminum hydroxide and ortho silicic acid (page 1, line 51 to page 2, line 17). The aluminum hydroxide and ortho silicic acid are then acid treated to produce alum, aluminum sulfate and silica (page 2, lines 60-69).

In contrast to the present claims, there is no teaching or suggestion in Scofield et al. of a system including a metal silicate selected from calcium silicates, magnesium silicates, iron-bearing silicates, or mixtures thereof. Scofield relates solely to a process that uses potash-feldspar ores and produces potassium silicates in an intermediate step.

In particular, there is no suggestion in Scofield et al. of a system for sequestering carbon dioxide gas from a gas stream using a calcium, magnesium or iron-bearing silicate, as recited in claim 1. Scofield et al. produces potassium bicarbonate as one of the products. However, a person of ordinary skill in the art would understand that potassium bicarbonate is not an effective way to sequester carbon dioxide for any length of time and under conditions in which the sequestering would ordinarily take place. Potassium bicarbonate is so water soluble that it readily decomposes giving off carbon dioxide when exposed to water, such as water in the ground or air. Therefore, a person of ordinary skill in the art would not use potassium bicarbonate for sequestering carbon dioxide.

There is no suggestion in Scofield et al. of a system for carbonating a metal silicate selected from calcium, magnesium and/or iron-bearing silicates, as recited in claim 3. Further, there is no suggestion of "a reactor structured for converting the metal silicate to a metal carbonate and silica with the use of a caustic material". Scofield et al. uses the caustic material to convert potash-feldspar ore into potassium silicate, not to convert the potassium silicate into potassium bicarbonate.

In contrast with claim 8, there is no suggestion in Scofield et al. of a system for recovering a useful metal from rock. Scofield et al. produces potassium bicarbonate, not a useful metal, and particularly not a useful metal that contains calcium, magnesium and/or iron as recited in new claim 39. There is no suggestion of a "reactor structured for converting the metal silicate to a metal carbonate, with the use of a caustic material". As discussed above, Scofield et al. uses the caustic material to convert potash-feldspar ore into potassium silicate, not to convert the potassium silicate into potassium bicarbonate. There is no suggestion of an "apparatus for removing the useful metal from the rock". Further with respect to claim 8, there is no suggestion in Scofield et al. of "a stream of the useful metal exiting the system".

It should also be noted that the Scofield et al. invention requires a calcining step prior to the digestion step (page 1, lines 35-40). In contrast, the present invention does not require this calcining step.

Further, at col. 2, lines 60-70, Scofield et al. describe the use of acid digestion to precipitate silica. In contrast, the present invention can precipitate silica as a result of the carbonation step, not by acid digestion.

Therefore, it is respectfully submitted that the claims are novel and nonobvious over Scofield et al.

In view of the above, Applicants respectfully request the Examiner to withdraw all the outstanding rejections and allow the amended claims.

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